

CLAIMS

1. An electronic component comprising:

a substrate;

a device supported by the substrate and comprising a first bond pad; and

a cap overlying the substrate and comprising:

- 5 an outside surface facing away from the substrate;
- the inside surface facing towards the substrate;
- a second bond pad at the outside surface;
- a third bond pad at the inside surface and electrically coupled to the
- first bond pad; and
- 10 an electrically conductive via extending through the cap and
- electrically coupling together the second and third bond pads.

2. The electronic component of claim 1 further comprising:

an adhesive material located between the cap and the substrate to form a

15 seal between the cap and the substrate.

3. The electronic component of claim 2 wherein:

the adhesive material is electrically conductive.

20 4. The electronic component of claim 2 wherein:

the adhesive material electrically couples together the first and third bond
pads.

5. The electronic component of claim 4 wherein:
the inside surface of the cap is substantially planar.

5 6. The electronic component of claim 4 wherein:
the inside surface of the cap is non-planar.

7. The electronic component of claim 2 further comprising:
an electrically conductive material located between the first and third bond
10 pads to electrically couple together the first and third bond pads.

8. The electronic component of claim 7 further comprising:
the adhesive material is wider than the electrically conductive material.

15 9. The electronic component of claim 1 wherein:
the inside surface of the cap is non-planar.

10. The electronic component of claim 9 further comprising:
an electrically conductive material located between the first and third bond
pads to electrically couple together the first and third bond pads; and
an adhesive material located between the cap and the substrate to form a
5 seal between the cap and the substrate,
wherein:
the electrically conductive material and the adhesive material have
similar heights.
- 10 11. The electronic component of claim 9 further comprising:
an electrically conductive material located between the first and second
bond pads to electrically couple together the first and second bond pads; and
an adhesive material located between the cap and the substrate to form a
seal between the cap and the substrate,
15 wherein:
the electrically conductive material and the adhesive material have
different heights.
12. The electronic component of claim 1 wherein:
20 the inside surface of the cap is substantially planar.

13. The electronic component of claim 12 further comprising:
an electrically conductive material located between the first and third bond
pads to electrically couple together the first and third bond pads; and
an adhesive material located between the cap and the substrate to form a
5 seal between the cap and the substrate,
wherein:
the electrically conductive material and the adhesive material have
similar heights.
14. The electronic component of claim 12 further comprising:
10 an electrically conductive material located between the first and second
bond pads to electrically couple together the first and second bond pads; and
an adhesive material located between the cap and the substrate to form a
seal between the cap and the substrate,
wherein:
15 the electrically conductive material and the adhesive material have
different heights.

15. The electronic component of claim 1 wherein:
the device is selected from the group consisting of a micromachined device,
an integrated circuit, and a discrete transistor.

16. The electronic component of claim 1 further comprising:
a second device supported by the substrate and comprising a fourth bond
pad,

wherein:

5 the cap further comprises:
 a fifth bond pad at the inside surface of the cap and
 electrically coupled to the fourth bond pad.

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17. An electronic component comprising:
- a substrate;
 - a device supported by the substrate and comprising an electrically conductive flip-chip bond pad;
- 5 a cap overlying the substrate and comprising:
- an electrically insulative material having an outside surface facing away from the substrate and an inside surface facing towards the substrate;
 - a first electrically conductive bond pad at the outside surface of the cap;
- 10 a second electrically conductive bond pad at the inside surface of the cap and overlying the electrically conductive flip-chip bond pad;
- an electrically conductive via extending through the cap from the outside surface of the cap to the inside surface of the cap and electrically coupling together the first and second electrically conductive bond pads; and
- 15 an electro-magnetic interference shield at the inside surface of the cap and adjacent to the second electrically conductive bond pad; and
- an electrically conductive material between the electrically conductive flip-chip bond pad and the second electrically conductive bond pad to electrically couple together the electrically conductive flip-chip bond pad and the second electrically conductive bond pad.
- 20

18. The electronic component of claim 17 wherein:
- the electrically conductive material seals the device between the cap and the substrate.

19. The electronic component of claim 17 further comprising:
an adhesive material located between the substrate and the inside surface of
the cap to seal the device between the cap and the substrate, the electrically
conductive material located between the adhesive material and the device.

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20. The electronic component of claim 19 wherein:
the inside surface of the cap is substantially planar.

21. The electronic component of claim 19 wherein:
the inside surface of the cap is non-planar.

10 22. The electronic component of claim 21 wherein:
the electrically conductive material and the adhesive material have similar
heights.

15 23. The electronic component of claim 21 wherein:
the electrically conductive material and the adhesive material have different
heights.

24. The electronic component of claim 19 wherein:
the adhesive material is wider than the electrically conductive material.

25. The electronic component of claim 17 further comprising:

a second device supported by the substrate and comprising an other electrically conductive flip-chip bond pad,

wherein:

the cap further comprises:

a third electrically conductive bond pad at the outside surface of the cap;

a fourth electrically conductive bond pad at the inside surface of the cap, overlying the other electrically conductive flip-chip bond pad, and adjacent to the electro-magnetic interference shield;

an other electrically conductive via extending through the cap from the outside surface of the cap to the inside surface of the cap and electrically coupling together the third and fourth electrically conductive bond pads; and

a first portion of the electrically conductive material is located between the electrically conductive flip-chip bond pad and the second electrically conductive bond pad to electrically couple together the electrically conductive flip-chip bond pad and the second electrically conductive bond pad; and

a second portion of the electrically conductive material is located between the other electrically conductive flip-chip bond pad and the fourth electrically conductive bond pad to electrically couple together the other electrically conductive flip-chip bond pad and the fourth electrically conductive bond pad.

26. A method of manufacturing an electronic component comprising:
- providing a substrate supporting a plurality of devices, each having a flip-chip interconnect;
- 5 packaging the plurality of devices while the substrate remains whole; and
- singulating the plurality of devices after packaging the plurality of devices.

100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1